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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/926,804	12/20/2001	Hideaki Shoji	216490US2PCT	8649
22850	7590	02/24/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			GENACK, MATTHEW W	
			ART UNIT	PAPER NUMBER
			2645	

DATE MAILED: 02/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/926,804	Applicant(s) SHOJI ET AL.	
	Examiner Matthew W. Genack	Art Unit 2645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>20 December 2001</u> . | 6) <input checked="" type="checkbox"/> Other: <u>Supplemental IDS</u> . |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1-3, 5, 7, 9, and 12 are rejected under 35 U.S.C. 102(a) as being anticipated by Waldron, U.K. Patent Application GB 2 335 081 A.

Regarding Claim 1, Waldron discloses a folding mobile telephone comprised of two main housing sections joined by a hinge (Abstract). One of the two sections, the top, is a cover (Page 1 Lines 17-20, Page 3 Lines 3-7, Figs. 1-2). The cover contains a slotted antenna made of copper (Page 2 Line 18, Page 3 Lines 13-17, Fig. 3). The presence of a power supply means within a working mobile telephone is inherent.

Regarding Claim 2, Waldron discloses that excitation of the antenna is via a coaxial lead across the gap between the two housing sections (Page 4 Lines 3-5). The slot itself is therefore free of a connection to the casing.

Regarding Claim 3, the slot of the antenna is parallel to the longest dimension of the cover (Fig. 3).

Regarding Claim 5, the two ends of the slot are of different widths (Fig. 3).

Regarding Claim 7, the wider of the two ends of the slot is position closer to the hinge joining the cover and the main body of the mobile telephone (Fig. 3).

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Regarding Claims 9 and 12, there exists a conducting sheet in the main body of the mobile telephone that acts as a reflector (and thus as a means for setting up a resonant standing wave condition) for the slot antenna when the cover is closed (Abstract, Page 2 Lines 4-9).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 8, and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron in view of Cassel, U.S. Patent Application Publication 2002/0030627.

Regarding Claim 4, Waldron discloses all of the limitations of Claim 1, upon which Claim 4 depends.

Waldron does not expressly disclose that the length of the notch is one fourth of a wavelength.

Cassel discloses an antenna for a mobile telephone ([0017] Lines 1-3, Fig. 1), said antenna being a slot, or notch, type antenna whereby electromagnetic radiation is emitted by means of a conductor with a slot ([0018] Lines 1-3). This antenna is a quarter wavelength antenna ([0021] Lines 1-2).

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At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by designing the slot antenna to be one fourth of a nominal operational wavelength long.

One of ordinary skill in the art would have been motivated to make this modification because of the impedance matching and radiation resistance advantages of an antenna of this length.

Regarding Claim 8, Waldron discloses all of the limitations of Claim 1, upon which Claim 8 depends.

Waldron does not expressly disclose a slot antenna with a bent geometry.

Cassel discloses a bent slot antenna (Fig. 2).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by designing the slot antenna with a bent geometry.

One of ordinary skill in the art would have been motivated to make this modification because such an arrangement saves space, which is critical inside of a mobile wireless device.

Regarding Claim 10, Waldron discloses all of the limitations of Claims 1 and 9, upon which Claim 10 depends.

Waldron does not expressly disclose the use of a resonator a quarter wavelength long whereby one end is open and the other is shorted.

Cassel discloses a slotted antenna equal to one fourth of a wavelength whereby one end of the slot is open and the other end of the slot is closed ([0021] Lines 1-3).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by designing the reflector plate to include a slot one fourth of a wavelength long and whereby one end of the slot is open and the other end of the slot is closed.

One of ordinary skill in the art would have been motivated to make this modification because a wireless communication device with such an arrangement would be able to receive weaker electromagnetic signals when the cover is in the closed position.

Regarding Claim 11, Waldron discloses all of the limitations of Claims 1 and 9, upon which Claim 11 depends.

Waldron does not expressly disclose the use of a resonator a half wavelength long whereby both ends are open.

Cassel discloses a slotted antenna equal to one half of a wavelength ([0021] Lines 1-3). Furthermore, Cassel discloses multiple open ends in the slot antenna (Fig. 2).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by designing the reflector plate to include a slot one half of a wavelength long and whereby both ends of the slot are open.

One of ordinary skill in the art would have been motivated to make this modification because a wireless communication device with such an arrangement would be able to receive weaker electromagnetic signals when the cover is in the closed position.

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5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron in view of Vannatta *et. al.*, U.S. Patent No. 5,649,306.

Regarding Claim 6, Waldron discloses all of the limitations of Claims 1 and 5, upon which Claim 6 depends.

Waldron does not expressly disclose a slot of different widths at each end whereby the wider end is opposite the hinge.

Vannatta *et. al.* discloses a radio communication device with a movable flip, said flip containing an antenna that may be of any suitable type (Column 4 Lines 41-49). The antenna is wider at the end opposite to the hinge (Fig. 1).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by designing the slot to be wider at the end opposite the hinge.

One of ordinary skill in the art would have been motivated to make this modification because of the advantages inherent in feeding a slot antenna in a narrow region of the slot.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Waldron in view of Koyanagi *et. al.*, U.S. Patent No. 5,940,040, further in view of Vannatta *et. al.*.

Waldron discloses all of the limitations of Claim 1, upon which Claim 13 depends.

Waldron does not expressly disclose the use of two matching circuits, detection means for determining the cover's position, and two switches whereby, based on the results of said detection means, one switch connects the antenna

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to the matching circuits and the other switch connects the matching circuits to the power supply.

Koyanagi *et. al.* discloses a mobile wireless device with two matching circuits and four switches (Fig. 6).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron by including two matching circuits in the telephone and two switches in the mobile telephone.

One of ordinary skill in the art would have been motivated to make this modification because of the increased efficiency that results when power is not lost due to impedance mismatches,

Neither Waldron nor Koyanagi *et. al.* expressly disclose means for detecting the position of a mobile telephone cover (or flip), nor the positioning of a switch immediately adjacent to an antenna or antennas.

Vannatta *et. al.* discloses means for detecting the position of the portable radio cover (Abstract). Furthermore, a switch is positioned immediately adjacent to the antennas, so that either of the two antennas may be connected or disconnected according to the position of the portable radio cover (Abstract, Figs. 5-6).

At the time that the invention was made, it would have been obvious to one of ordinary skill in the art to modify the invention of Waldron as modified by Koyanagi *et. al.* by including means for detecting the position of the mobile telephone cover, and based on this result, causing one switch to connect the

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antenna to the matching circuits and causing the other switch to connect the matching circuits to the power supply.

One of ordinary skill in the art would have been motivated to make this modification because of the increased efficiency that results when power is not lost due to impedance mismatches, and the necessity of switching between modes depending on the position of the cover, as the position of the cover is related to the way that the user is using the telephone.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew W. Genack whose telephone number is 703-605-4305. The examiner can normally be reached on FLEX.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on 703-305-4895. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Matthew Genack

Examiner

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18 February 2005



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